# US EPA ENERGY STAR PROGRAMS

## Introduction

The U. S. Environmental Protection Agency's (EPA) ENERGY STAR program is an umbrella of voluntary programs consisting of: the ENERGY STAR Labeling program, the ENERGY STAR New Homes program, the ENERGY STAR Buildings program and the ENERGY STAR Small Business program. All the programs are administered by EPA's Atmospheric Pollution Prevention Division; the Labeling program is jointly run by the EPA and the US Department of Energy (DOE).

The overall goal of the various ENERGY STAR programs is to reduce air pollution from the burning of fossil fuels (needed to generate the large quantities of electricity used in the United States) by promoting the development and use of energy efficient products. ENERGY STAR Partners (e.g., manufacturers, private sector industries, government, public and private organizations) volunteer to join one or more of the ENERGY STAR programs and pledge to either make or use energy efficient products. It is hoped that the cost savings realized by the use of energy efficient products will encourage more companies and other organizations to join the program, and therefore prompt more manufacturers to produce these types of products in larger volume and at lower prices.

Each of the programs will be discussed briefly below with more emphasis on the ENERGY STAR Labeling Program.

## Recent Developments

The ENERGY STAR Labeling program is in the process of expanding to include televisions, video cassette recorders (VCRs), and windows. EPA has decided to label consumer electronics because, according to the US Energy Information Administration, consumer electronics and small electrical appliances are expected to account for about 90 percent of the projected increase in carbon dioxide emissions from residential and commercial buildings over the next 20 years. Manufacturers are now signing agreements to label Televisions and VCRs, and it is expected that these labeled products will be on the market in early 1998. The DOE has chosen to label windows, which in many homes are a significant factor in heating and cooling losses and therefore energy consumption.

## Program Summaries

### *ENERGY STAR Labeling Program*

As mentioned above, the ENERGY STAR Labeling program is funded and managed jointly by the US EPA and the US Department of Energy (DOE). The program was created to provide customers with an easy way to recognize energy efficient products by labeling these products with the

ENERGY STAR logo. Manufacturers and retailers participating in the ENERGY STAR Labeling program sign a Memorandum of Understanding (MOU) with EPA and DOE agreeing to produce, label, and sell products that meet the product specifications. EPA and DOE establish the criteria, and the agencies then allow manufacturers and retailers to use the ENERGY STAR logo, a single-attribute seal of approval, on products and in advertising. As part of this program, EPA is implementing a nationwide consumer education awareness campaign to educate users about these products and the label.

Though there are plans to expand the labeling program in 1998, currently there are seven product categories that are part of the labeling program. These include: office equipment, residential light fixtures, exit signs, transformers, residential heating and cooling equipment, insulation, and major household appliances. Some of these will be discussed briefly below.

*ENERGY STAR Office Equipment Program*:

The Office Equipment program was the first of the ENERGY STAR programs to label products. It was launched in June 1992, and is designed to promote the development and use of energy-efficient office equipment. Manufacturers of computers, monitors, printers, fax machines, and copiers are eligible to join the program if they produce energy-efficient versions of these products. The basis of this program is that each participating company agrees to introduce computers, monitors, printers, fax machines, or copiers, that switch to a low power state when left idle. For example, ENERGY STAR computers drop their power draw to 30 watts or less, a 50 to 75 percent reduction compared to normal power draw, by automatically turning to a "sleep" mode when not in use. Similarly, ENERGY STAR monitors power down to 30 watts or less when not in use by turning to a sleep mode. Printers power down to 15 to 45 watts when not in use. ENERGY STAR fax machines have a power-management feature that can reduce energy costs by 50 percent. They also have a sleep mode and double-sided faxing capabilities, thereby cutting down on paper costs. ENERGY STAR copiers automatically turn off after a period of inactivity.

An independent study by the US DOE Lawrence Berkeley Laboratories estimates that US businesses could save almost $1 billion per year in energy costs, or $900 million, by the year 2000, by converting to energy-efficient office equipment.

Almost all major manufacturers of these products have joined the program. Companies that market qualifying products may use the EPA ENERGY STAR logo to identify those products. EPA emphasizes that the purpose of the ENERGY STAR logo is to promote energy efficiency only, and that EPA does not endorse any particular product. For office equipment users, however, joining the program and buying energy efficient products is voluntary. Executive Order 12873 (which addresses Federal Acquisition, Recycling, and Waste Prevention), however, directs the various agencies of the federal government, the largest purchaser of office equipment in the world, to purchase ENERGY STAR computers, monitors, and printers, provided that they are available commercially and meet performance standards.

*ENERGY STAR Residential Light Fixtures Program*:

Established in June 1997, the ENERGY STAR Residential Light Fixtures Program is one of the newest programs under the ENERGY STAR Labeling program. Partners agree to manufacture energy-efficient lighting fixtures for installation in homes, especially in high-use sockets, such as in kitchens, living rooms, and outdoor areas. ENERGY STAR lighting fixtures are 'dedicated' fixtures, which means that they are designed to operate only energy-efficient sockets. These fixtures start immediately, (i.e. they don't need to warm up), operate quietly, and may also have dimming or switching features. Outdoor fixtures automatically turn off in daylight and some fixtures have motion detector on-off features.

*ENERGY STAR Exit Signs Program*:

In June 1996, EPA launched the ENERGY STAR Exit Signs Program to develop energy-efficient exit signs. Manufacturers involved in this program produce energy-efficient exit signs that meet the EPA ENERGY STAR guidelines. Manufacturers can then use the ENERGY STAR logo on their product. Manufacturers do their own testing to ensure that products meet the guidelines.

ENERGY STAR exit signs operate on less than 5 watts of electricity per face. In addition, they have been tested by the manufacturer and are found to have levels for visibility and luminance that exceed those required by the National Fire Protection Agency's Life Safety Code. It is estimated that by the year 2000, these exit signs could save companies a cumulative 800 million kilowatts of electricity, an estimated cost savings of $70 million each year.

*ENERGY STAR Transformers Program*:

This program is a partnership between the EPA and electric utility companies and transformer manufacturers. The program was established in April 1995. By joining the program, utility companies agree to buy cost-effective, high-efficiency transformers for their electricity distribution systems. Manufacturers of transformers also agree to produce ENERGY STAR transformers and agree to market them to electric utilities. Even though electric transformers are already about 98 percent efficient, it is estimated that ENERGY STAR transformers can easily reduce energy loss levels by 10 to 40 percent. Additionally, an estimated 3.4 billion kilowatt hours of savings is projected with the use of ENERGY STAR transformers.

*ENERGY STAR Residential Heating and Cooling Program*:

In this program, manufacturers agree to produce and market high-efficiency heating and cooling equipment. The program was established in April 1995. ENERGY STAR-labeled products under this program include furnaces, air conditioners, geothermal heat pumps, gas-fired heat pumps,

thermostats, and boilers. Further, EPA is working with the financial industry to encourage the development of lower cost commercial loans to purchasers of ENERGY STAR heating and cooling equipment.

*ENERGY STAR Homes Program*

The ENERGY STAR Homes Program was established in April 1995. It is a partnership between EPA and home builders and developers. Builders and developers who join the program agree to build energy-efficient homes. Guidelines for these homes are detailed in the ENERGY STAR Homes MOU. Energy efficient lighting systems, heating, ventilation, and air condition systems, as well as energy efficient insulation, are installed in ENERGY STAR homes.

ENERGY STAR Homes can be advertised as such in real estate listings and with real estate brokers. Home buyers may also inquire about energy-efficiency upgrades in their existing homes. It is estimated that home buyers can cumulatively save an estimated $1.80 billion in utility bills by purchasing ENERGY STAR Homes.

*ENERGY STAR Buildings and Green Lights Program*

The ENERGY STAR Buildings and Green Lights Program was established in 1991 and is the first of the ENERGY STAR programs. It is aimed at encouraging the widespread use of energy-efficient lighting. Partners agree to install energy-efficient lighting "where profitable as long as lighting quality is maintained or improved." Federal agencies that are partners in the program have until the year 2005 to complete lighting upgrades in their buildings.

In April 1995, the Green Lights program was expanded in the ENERGY STAR Buildings Program aimed at maximizing energy efficiency building-wide. In order to become a partner, commercial building owners agree to upgrade their building to become more energy efficient. Partners are encouraged to follow a five-step upgrade procedure: 1) installing energy efficient lighting; 2) completing a general building tune-up; 3) performing load reductions; 4) undertaking fan system upgrades; and 5) upgrading heating plant and cooling systems. The MOU in this program outlines in detail each of the requirements under these stages as well as EPA's and the partner's responsibilities.

Participants in the ENERGY STAR Green Lights and Buildings Program include corporations, small businesses, universities, health care facilities, non-profit organizations, school districts, and federal and state governments. Since the beginning of the Green Lights program in 1991, participation has grown from 39 members to 2,400 in 1997.

*ENERGY STAR Small Business Program*

Launched in June 1996, the ENERGY STAR Small Business Program is a partnership between EPA and small businesses. The program provides technical assistance and information to its partners in order for them to find ways to earn energy-efficient simple pay backs of three years or less. Small businesses or non-profit organizations can join the program if they have facilities of 100,000 square feet or less, and if they agree to upgrade these facilities to make them energy-efficient. Additionally, partners agree to purchase ENERGY STAR-labeled products. EPA will provide partners with workshops, seminars, a hotline, and a Web site on available energy-efficient upgrades, as well as publicize success stories. It is estimated that typical small business can save from 30 to 50 percent of their energy bills by conducting energy efficiency upgrades. As of August 1997, 100 small businesses had joined the program.

### Program Methodology

As mentioned above, all of the ENERGY STAR programs aim at reducing air pollution through the use or production of energy-efficient products. Product categories are therefore evaluated according to their environmental impacts in terms of their energy use. Similarly, businesses are assessed according to their energy-efficient building management.

The ENERGY STAR program reports that when choosing product categories and establishing product standards for the ENERGY STAR Labeling program, previous literature about the product category, independent testing and auditing, and information provided by participating producers are used. Additionally, the program conducts generic/modeled environmental impact assessments when choosing product categories.

### References

Betsy Agle, ENERGY STAR Labeling Programs, US Environmental Protection Agency. Personal communication with Abt Associates, October, 1997.

Jeff Ryan, ENERGY STAR Programs, US Environmental Protection Agency. Personal communication with Abt Associates, November, 1997.

United States Environmental Protection Agency, ENERGY STAR Homepage, http://www.epa.gov/energystar.html

US Department of Energy, ENERGY STAR Homepage, http://www.energystar.gov.

Business and the Environment (BATE), *US "ENERGY STAR" Program Continues to Expand*, August 1997.

Business and the Environment (BATE), *US "ENERGY STAR" Program to Include TVs and VCRs*, June 1997.

Lawrence Berkeley Laboratories, *US EPA ENERGY STAR Program*, http://eande.lbl.gov/EPA/EUF/oeexesum.html.

### Product Categories

*ENERGY STAR Labeling Program*

- Computers
- Monitors
- Fax Machines
- Photocopiers
- Printers
- Exit Signs
- Residential Light Fixtures
- Furnaces
- Air conditioners
- Geothermal heat pumps
- Gas-fired heat pumps
- Thermostats
- Boilers
- Transformers